

Comment Number	Commenter	Section	PDF Page No. (optional)	Paragraph No. (optional)	Reviewer Comment	NSR/ARCADIS Response
<b>TECHNICAL COMMENTS - NSR/ARCADIS Wastewater Treatment and Contained-In Determination Operational Summary – April 28, 2023</b>						
1	Frank Zingales (OEPA)	1	5		Update this section to reflect the NSRC East Palestine Waste Management Plan was approved on April 18, 2023 by EPA.	The text has been revised as indicated.
2	Frank Zingales (OEPA)	1			Revise the document to indicate that wastes generated from stormwater infrastructure decontamination activities (e.g., pipe jetting) or similar non-media wastes will be managed separately and not included in a CID request.	The text has been revised as indicated.
3	Frank Zingales (OEPA)	Various			Revise the document (in particular Sections 1, 2.2, 2.4, 3.2, 4, 4.3-4.7) to include information regarding the proposed collection and subsequent treatment of groundwater from the site. For clarity, identify the sources of groundwater currently being collected (in addition to groundwater from monitoring wells).	The text has been revised as indicated.
4	Frank Zingales (OEPA)	2.2	8		Revise the table to provide the correct address for Vickery.	The text has been revised as indicated.
5	Frank Zingales (OEPA)	2.2	8		Revise the table to identify the correct name of TM Deer Park Services for TXD000719518.	The text has been revised as indicated.
6	Frank Zingales (OEPA)	2.3	8		Revise this section to identify that additional characterization activities may be necessary for the wastewater and agency approvals when conducting remediation operations in area(s) that have not been currently assessed.	The text has been revised as indicated.
7	Frank Zingales (OEPA)	3.2	10	1	Revise this paragraph to indicate the use of six temporary storage tanks for storage of treated wastewater, not seven as written.	The text has been revised as indicated.
8	Frank Zingales (OEPA)	3.2	10		Each separate CID request needs to include the generator name, EPA ID number, batch specific CID number, contact information, general description of how the media was generated and treatment process, volume of media requested as part of the CID and corresponding tank location/identification, proposed off-site management facility, comparative risk-based level (e.g., MCL) for the CID determination, sampling information (collection date(s)/time(s)), special handling information if necessary, generator certification statement, contact name and signature, data summary table, and corresponding analytical report. Include an example template for review.	The text has been revised as indicated.
9	Frank Zingales (OEPA)	3.2	10		Include a quality assurance project plan (QAPP) for the proposed sampling activities and data quality objectives (DQOs) associated with CID request. Please include the data quality review process in the QAPP as well.	QAPP will be provided under separate cover.
10	Frank Zingales (OEPA)	4.1	14		Item 6 - "With the CID approval, NSRC could ship up to 150,000 gallons of treated water daily, or over one million gallons a week. Additionally, NSRC shall ship untreated water as hazardous waste as necessary to ensure there is never overflow into Sulphur Run." Please note that untreated wastewater remains a hazardous waste.	The text has been revised as indicated.
11	Frank Zingales (OEPA)	4.3	14		Revise the document to include information to demonstrate the proposed collection and treatment system complies with ARARs for RCRA Subtitle C, in particular Temporary Unit use (40 CFR 264.553/OAC rule 3745-57-73), as well as the Organic Air Emission Standards in 40 CFR parts 264 and 265, subparts AA, BB and CC.	The text has been revised as indicated.
12	Frank Zingales (OEPA)	4.4	15		The secondary containment system capacity for the modular tanks may be insufficient during equalization activities. Describe how adequate secondary containment system capacity will be maintained during equalization activities.	As discussed in the April 26, 2023, meeting, the tanks are viewed as individual tanks. During equalization, the tanks are continuously monitored. Once complete valves on each tank are closed and locked so that they do not operate as one tank. This is similar to the Oil Pollution Prevention regulations 40 CFR Subpart D Appendix D to Part 112 - Determination of a Worst Case Discharge Planning Volume, section 1.2 that states, "For purposes of this rule, permanently manifolded tanks that are separated by internal divisions for each tank are considered to be single tanks and individual manifolded tank volumes are not combined."

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13	Frank Zingales (OEPA)	4.5	16		Describe how the interstitial space for double-walled piping will be monitored.	A valve will be inserted to monitor the interstitial space. When operated any presence of flow indicates a leak into the interstitial space. The text has been included in Section 4.5.
14	Frank Zingales (OEPA)	5.2	22		A CID that is granted by Ohio EPA is only applicable to facilities in Ohio. Provide written documentation that an out-of-state facility and the corresponding state's authorized RCRA program will accept the CID.	The text has been revised as indicated.
15	Frank Zingales (OEPA)		36	Figure 1	The figure is labeled as Figure 4. Include a more recent aerial image with all pertinent site features, including the storage tanks and treatment area.	Figure 1 has been revised accordingly.
16	Frank Zingales (OEPA)		37	Figure 2	Identify the location of all collection points and conveyance piping leading to the two 1,000,000-gallon tanks.	Water collection points and conveyance piping have been added to Figure 1 as some of the collection points are located beyond the Figure 2 field of view.
17	Bill Zawiski (OEPA)		39	Figure 4	Liquid phase shows a 2 inch discharge pipe. At 144,000 gpd, there would need to be a bit of pressure to get that much flow out of the pipe. What are the working flow and psi assumptions for the liquid phase? Are the connecting pipes adequately sized for the proposed flows at the design operating pressures?	The discharge line from the lag LGAC vessel is a mistakenly shown as 2" diameter on the P&ID figure that was submitted with the CID. This line is actually a 3" diameter hose. This is a short length of hose, which connects to the treated effluent conveyance line at the eastern end of the system equipment laydown area. The treated effluent conveyance line is a 6" diameter HDPE pipe installed within a 10" diameter outer carrier pipe, which carries treated effluent from the treatment system to the effluent storage tank area. The figure (now Figure 4d) has been revised to show the correct diameters of these effluent discharge lines. Water is transferred through the LGAC units and through the discharge line to the treated effluent storage tanks by the air stripper transfer pump. The air stripper transfer pump can produce 130 ft of dynamic head (56 PSI) at the system design flow rate of 100 gpm. The pump was intentionally oversized to overcome additional backpressure produced as particulates accumulate in the bag filters and LGAC vessels over time. The system pumps and piping are sized correctly for the design flow and expected operating pressures.
18	Bill Zawiski (OEPA)		41	Figure 6	Please show influent piping (Mentioned in several comments)	Figure 6 has been updated as requested.
19	Bill Zawiski (OEPA)				For the piping from treatment to finished storage, please show the details of the road crossing. Figure 2 indicates it will be overland pipe but trenching may be more appropriate.	An inset detail has been provided on Figure 2.
20	Erik Bewley (OEPA)				DAPC suggests the following exemption be requested through a letter using OAC rule 3745-31-03(B)(3)(b), which states: (b) At the director's discretion, the director may exempt the installation and operation of an air contaminant source from the requirements to obtain a permit-to-install or PTIO to deal with an emergency situation involving immediate threats to human health, property or the environment. Please include the following in the letter: (1) expected emission estimates (please provide assumptions and calculations) of vinyl chloride and total organics (daily and annual), (2) expected length of time of project.	The requested information will be included in the letter.
21	Tom Kady (USEPA)	2.4	9		Re: Assumed recovery operations of 6 to 12 months -- Freeze protection required by end of Oct.	If the treatment system is still operating into the Fall of 2023, the appropriate freeze protection measures will be installed on the system equipment and piping. If necessary, these winterization measures will be installed before the end of October 2023.
22	Tom Kady (USEPA)	3.2	10	4	Lab analysis should achieve a detection limit of 1 ug/L, given the effluent target is less than 2 ug/L	Section 3.2 has been revised accordingly.

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23	Tom Kady (USEPA)	4.3	14		At ~140k gallons per tank and 5000 gal/truck, each daily batch requires 28 truck loads. Is this daily rate sustainable? With 1-day fill time, 3-day lab turnaround, and 1-day CID approval, there is only one surplus effluent tank.	The text has been revised as indicated.
24	Tom Kady (USEPA)	4.4	15		How will the 1MM-gallon tanks be tested prior to putting into service?	The two one million-gallon temporary tanks will be managed in accordance with the NSRC East Palestine Waste Management Plan (the "WMP"), which was approved on April 18, 2023 by USEPA.
25	Tom Kady (USEPA)	4.5	17	2nd full	Describe the expected frequency, methodology and location(s) of vapor effluent sampling over project duration.	Air samples will be collected for analysis from the air stripper effluent, between each of the VGAC and potassium permanganate impregnated media vessels and the system effluent on a daily basis during the first week of stormwater treatment operations, both to confirm that the vapor treatment equipment is operating as designed and that the treated off gas is below action levels. Assuming this is confirmed by the sample results, the sampling frequency will then be decreased to weekly for the remainder of the first month of operation, and then bi-weekly for the remainder of system operation. Total VOC concentrations will also be measured at these same locations on a daily basis using a photoionization detector. Section 4.5 has been revised to mention the collection of air samples and field measured VOC readings from the air stripper off-gas stream. Specific details on system performance monitoring are provided in the OM&M Manual, which will be submitted to the agencies for review under separate cover.
26	Tom Kady (USEPA)	4.5	18		Re: Transfer Pump bullet 5: Globe valves typically used for controlling flow rates. Gate valves typically for on/off.	A butterfly valve will be added to allow for throttling of the flow rate from influent transfer pump P-100.
27	Tom Kady (USEPA)	Figure 4	39		Figure 4 states transfer line from 1MM-gal storage tanks is ~100 feet of 2" hose. Text and site walk discussions stated double-wall HDPE. Please correct drawing for influent and effluent lines.	The transfer line from 1MM-gal storage tanks is 4" diameter HDPE line within an 8" HDPE containment pipe.
28	Nanda Thalasila (USEPA)	1	5	7th Bullet	Only vinyl chloride contaminant of concern? What analyses are required for disposal facility acceptance? Are these pre-treatment or post-treatment? What about new unassessed areas?	The text has been revised as indicated.
29	Nanda Thalasila (USEPA)	2.1	7		Maximum waste water generation from 1-inch precipitation or 500K gpd was assumed. Storage plus treatment capacity should be balanced to allow for larger / extended precipitation events based on seasonal highs (2.6 inches / day ?).	If the volume of waste water generated exceeds the capacity of the treatment system and the storage volume buffer provided by the two collection tanks, then the excess will be loaded into trucks and transported offsite for disposal as hazardous waste in accordance with current water management practices.
30	Nanda Thalasila (USEPA)	4.1	13	4th item	Increase site safety (sub item) - piping connecting tanks should be valved properly to prevent accidental drainage of water from one tank to another. Please describe the equalization process and SOP.	Each tank has a valve at the connection to the equalization pipe both of which are locked-out at all times except during equalization of the tanks. The tanks need to be equalized because the tanks may not be filled at the same rate because they are filled by different means. The western tank is filled by direct pumping and the eastern tank is filled by off-loading trucks. During equalization, each tank's valve is opened and continuously monitored until tanks have reached equal levels at which point the valves are shut and locked. The equalization process is described in Section 4.4.
31	Nanda Thalasila (USEPA)	4.1	13	4th item	Piping should be sloped appropriately to prevent water / waste water from accumulating within piping. Clean-outs should be provided if accumulation of sediments / debris is anticipated.	It is not anticipated that water will accumulate in the effluent piping as it is under pressure; nor is sediment expected in the piping following treatment.

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32	Nanda Thalasila (USEPA)	4.5	17	VGAC and KMnO4	VGAC and KMnO4 usage are modeled based on specific compounds and not total organic compounds in waste stream. A bench scale test can be conducted to model treatment media usage more accurately.	The vapor treatment process proposed for the air stripper off-gas is very robust, and the supporting modeling was performed using very conservative assumptions. Thus, the proposed vapor treatment process should be more than sufficient to achieve the 95% design removal efficiency for total VOCs and HAPs. Extensive sampling and field monitoring of the vapor treatment process will be performed during the first week of stormwater treatment system operation. These data will allow for calculation of the actual removal efficiencies and usage rates of the media, which will be more accurate than estimated provided by laboratory bench testing.
33	Nanda Thalasila (USEPA)	4.5	16	PLC	Emergency manual shut-off capability should be located at a safe area where operators can shut-off system safely, if necessary. Discussed during site walk, but not in the document.	An emergency shut-off switch (E-stop) is located on the control panel on the outside of the treatment system building and another will be installed at the treated effluent storage tank area this will allow workers to shut down the system from both locations.
34	Ralph Dollhopf (USEPA)	1	1	3	delete "and Ohio Environmental Protection Agency (OEPA)". The distinction here and in several comments below is that EPA approves operation of the onsite water treatment and shipment of the waste, whereas OEPA makes the Contained-In Determination.	The text has been revised as indicated. However, the correction was located in the 1st paragraph not the 3rd.
35	Ralph Dollhopf (USEPA)	1	5	3rd Bullet	delete "which is currently under review by Incident Command" We believe the plan has since been approved.	The text has been revised as indicated.
36	Ralph Dollhopf (USEPA)	1	6	1st Bullet, last sentence	change "until USEPA OSR approval" to "until USEPA approval"	The text has been revised as indicated.
37	Ralph Dollhopf (USEPA)	1	6	2nd Bullet	Change "OSR approval" to "EPA approval"	The text has been revised as indicated.
38	Ralph Dollhopf (USEPA)	1	6	last paragraph, first sentence	Delete "/USEPA". Data sets are submitted to OEPA for the CID requests. Please cc USEPA, but the submittal is to OEPA.	The text has been revised as indicated.
39	Ralph Dollhopf (USEPA)	3.2	10	paragraph 3	Change "EPA/OEPA" to "OEPA"	The text has been revised as indicated.
40	Ralph Dollhopf (USEPA)	4	11	first paragraph	Change "OEPA/USEPA" to "OEPA"	The text has been revised as indicated.
41	Ralph Dollhopf (USEPA)	4	11	paragraph 3	"Water sent to the CWT would be treated a second time before being discharged to a POTW" Please reword. "Treated a second time" is somewhat confusing.	The text has been revised to clarify.
42	Ralph Dollhopf (USEPA)	4.1	11	benefit 1	"/(designated an environmental justice community by USEPA)". Please confirm.	Removed, cannot confirm.
43	Ralph Dollhopf (USEPA)	4.1	12	2nd Bullet	change "remedial activities" to "removal activities"	The text has been revised as indicated.
44	Ralph Dollhopf (USEPA)	4.1	12	Benefit 2	Change "allow for an immediate reduction in the overall footprint" to "reduce the overall operational footprint of the site"	The text has been revised as indicated.

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45	Incident Command	1	5	Paragraph 2	Page 1 Section 1 Paragraph 2 Bullet Point 2: The collected water will be treated through an onsite treatment system capable of removing vinyl chloride to levels below the Maximum Contaminant Level (MCL) of 2 micrograms per liter (µg/L). The MCL is the highest level of a contaminant that is allowed in drinking water. Has this been verified to be accurate?	This statement is based on modeling performed to simulate the removal of vinyl chloride and other VOCs from water by the air stripper using software from the manufacturer. The model output is provided in Attachment 1. The air stripper removal efficiency and resulting vinyl chloride concentrations in the results treated effluent water stream will be confirmed by sampling during system startup.
46	Incident Command	2.2	8	Paragraph 1	Page 4 Section 2.2 Paragraph 1: The recovered water may have a sheen but does not contain measurable product. Are there sample results that support this statement? Reference report.	Text has been revised, product levels are gauged in the field using an interface probe.
47	Incident Command	3.2	10	Paragraph 3	Page 6 Section 3.2 Paragraph 3: The MCL is defined by USEPA as the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCL Goals as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards. What is the reference for this statement?	Links to web pages have been added.
48	Incident Command	4.1	12	Paragraph 3	Page 6 Section 4.1 Bullet Point 1: Currently, water is collected by a fleet of 16+ vac trucks and tankers driving and transported throughout the community every day to multiple hazardous waste storage locations (tank farms 3, 5 and 6). Instead of 16+ should it be reworded? Say "at a minimum, 16 vac trucks...)"	The text has been revised as indicated.
49	Incident Command	4.2	14	Paragraph 2	Page 10 Section 4.2: Treated off-gas from the stormwater treatment system air stripper will be discharged to the atmosphere under either an air permit from OEPA, or an emergency air permitting exemption letter from the OEPA director. Will there be air monitoring being conducted at this location to determine that treated off gas is below determined action levels?	Yes. See response to Comment 25.
50	Incident Command	4.5	17	Paragraph 3	Page 13 Section 4.5 Paragraph 3: The VGAC is expected to achieve greater than 95% control efficiency for all VOCs in the air stripper off-gas stream other than vinyl chloride. The vinyl chloride is expected to pass through the granulated activated carbon and will be treated by the potassium permanganate impregnated media, which is expected to achieve greater than 95% control efficiency for vinyl chloride and any other VOCs remaining in the effluent upon exiting the VGAC. Both control efficiency assumptions are conservative. The USEPA document "Chapter 1 – Carbon Adsorbers" by John L. Sorrel, published in October 2018 states, "When properly designed, operated, and maintained, carbon adsorbers can achieve high VOC removal efficiencies of 95 to 99 percent at input VOC concentrations of between 500 and 2,000 ppm in air. Removal efficiencies greater than 98 percent can be achieved for dilute waste streams." Both control efficiency assumptions will be confirmed by vapor sampling during the first two days of operation. What is the process if it doesn't achieve greater than 95%?	This situation is not expected to arise. However, if the vapor treatment process does not achieve the design 95% removal efficiency for vinyl chloride and other VOCs then the existing vapor treatment process design will be reviewed/modified to attain the 95% target removal efficiency. For example one or more of the additional treatment vessels that are currently onsite as spares could be added to the treatment process stream.
51	Incident Command	4.7 (Table 2)	21	N/A	Page 17 Table 2 Air Stripper: Monitor sump pressures, operational flow rates, and effluent VOC concentrations. Where is it described how VOC concentrations will be monitored?	Monitoring of VOC concentrations in the air stripper effluent vapor stream is discussed in the response to Comment 25 above. Additional details are provided in the treatment system OM&M Manual, which will be submitted to the agencies for review under separate cover.
52	Incident Command	5.1	22	Paragraph 1	Page 18 Section 5.1 Paragraph 1: Portions of East Martin Street, the access road to and from the CID Tank Farm, and the truck loading area will be paved to minimize the generation of dust and to facilitate runoff collection. Will air monitoring be conducted during truck loading activities?	The text has been revised as indicated.
53	Incident Command	1	5 & 6	Paragraph 2	Pages 1-2, bullet "Upon receipt of the analytical data..." – If OEPA and USEPA will want multiple daily batch data sets prior to approving the initial CID, it would be helpful to specify how many in this plan, so that the team is aware of when to expect data packages and which to compare for approval. Note there is six days' storage capacity available.	Revised and moved to Section 3.4.
54	Incident Command	2.4	9	Paragraph 3	2.4 – System is described to have treatment capacity of 140,000 GPD – 2.1 cites up to 500,000 GPD during rain events. Rainy season is approaching; how will NSRC account for this deficit in capacity?	If the volume of surface water generated exceeds the capacity of the treatment system and the storage volume buffer provided by the two collection tank, then the excess will be loaded into trucks and transported offsite for disposal as hazardous waste in accordance with current surface water management practices.

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55	Incident Command	3.2	10	Paragraph 2	3.2 – “Each temporary tank will be representative of a 24- hour treatment batch, samples will be collected at a frequency and time agreed to by the OEPA and NSRC.” – This should be specified prior to plan finalization and sampling frequency/time should be stated in the plan.	The plan has been revised to clarify sampling frequency.